

REMARKS

Claims 1-37 are now pending in the application. Claims 25-37 are withdrawn from consideration. Claims 1-24 stand rejected. Claims 1, 4, 6, 7, 12, 17 and 19-20 have been amended herein. Claims 2-3, 11, 13, 16 and 24 have been cancelled herein. Support for the amendments to the claims can be found at least in Figures 1-3. No new matter has been added. The Examiner is respectfully requested to reconsider and withdraw the rejections in view of the amendments and remarks contained herein.

REJECTION UNDER 35 U.S.C. § 102

Claims 1, 4, 8-12, 17 and 21-24 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Asano (JP Pat. No. 0046580). This rejection is respectfully traversed.

Claim 1 recites a flattened tube heat exchanger and calls for "a portion of the second end of the at least one heat transfer fin extending into at least one of the spaces between adjacent portions of the heat transfer surfaces without contacting the adjacent portion of the heat transfer surface." Similarly, claim 12 recites a flattened tube heat exchanger and calls for "a portion of the second end of the at least one heat transfer fin extending into the space between the radially adjacent heat transfer surfaces without contacting the radially adjacent heat transfer surface."

In contrast, the Asano reference teaches and discloses that both ends of the heat transfer fin are in contact with the opposing heat transfer surfaces. See Figures 1-4 in the Asano reference. Having both ends of the heat transfer fin in direct contact with the opposing heat transfer surfaces is not the same as the subject matter of claims 1 and

12. Accordingly, for at least this reason it is respectfully submitted that claims 1 and 12 are patentable over the Asano reference. Claims 4, 8-10, 17 and 21-23 all depend from one of claims 1 and 12 and, therefore, for at least the reasons stated above with reference to claims 1 and 12, are also patentable over the Asano reference. Claims 11 and 24 have been cancelled. Accordingly, withdrawal of the instant rejection is requested.

REJECTION UNDER 35 U.S.C. § 103

Claims 1-7, 10-20 and 23-24 stand rejected under 35 U.S.C. § 103 as being unpatentable over Pestiaux (FR Pat No. 597464) in view of Shoop (U.S. Pat. No. 1,830,375). This rejection is respectfully traversed.

Referring to claim 1, the claim recites a flattened tube heat exchanger and calls for:

“a continuous flattened tube having first and second ends with a length therebetween and opposite first and second heat transfer surfaces that extend from the first end to the second end . . . portions of the heat transfer surfaces being adjacent to other portions of the heat transfer surfaces and being spaced apart . . . at least one continuous heat transfer fin . . . conductively attached to one of the first or second heat transfer surfaces and substantially extending along an entirety of the length of the tube, and a portion of the second end of the at least one heat transfer fin extending into at least one of the spaces between adjacent portions of the heat transfer surfaces without contacting the adjacent portion of the heat transfer surface.”

Similarly, claim 12 recites a flattened tube heat exchanger and calls for:

“a continuous flattened tube having first and second ends with a length therebetween and opposite first and second heat transfer surfaces that extend from the first end to the second end . . . the tube being coiled along the length so that the first and second heat transfer surfaces are radially opposite and radially adjacent heat transfer surfaces are spaced apart . . . at least one continuous heat transfer fin . . .

conductively attached to one of the first or second heat transfer surfaces and substantially extending along an entirety of the length of the tube, and a portion of the second end of at least one heat transfer fin extending into the space between the radially adjacent heat transfer surfaces without contacting the radially adjacent heat transfer surface.”

It is respectfully submitted that the subject matter of claims 1 and 12 is not anticipated nor rendered obvious by the prior art of record.

The Pestiaux reference fails to disclose a continuous heat transfer fin that extends substantially along an entirety of the length of the continuous flattened tube. Rather, the Pestiaux reference discloses the use of individual discrete fins that encircle discrete portions of the tube. The Shoop reference discloses the use of a continuous fin that can extend along a portion of the length of the tube. The Shoop reference, however, does not teach, suggest, nor disclose the use of such a fin arrangement to form a heat exchanger having portions of the heat transfer surface being adjacent to other portions of the heat transfer surfaces and being spaced apart nor with a space existing between radially adjacent heat transfer surfaces as called for in claims 1 and 12. Furthermore, the heat transfer fins shown in the Shoop reference are heretofore used in applications wherein the opposite surfaces of the heat transfer fin are in direct contact with opposing heat transfer surfaces, such as that shown in Figures 1-4 of the Asano reference. The use of a continuous heat transfer fin in direct contact with opposing heat transfer surfaces is in direct contrast to the heat transfer fins as called for in claims 1 and 12 wherein the continuous fin extends along an entirety of the heat transfer surface including the bends and curvatures thereon while a second end of each heat transfer fin does not contact the adjacent heat transfer surface. Furthermore, the use of a continuous heat transfer fin that extends around the bends (both inner and/or

outer) without contacting the adjacent heat transfer surface requires careful consideration of at least the pitch of the fin and the radius of curvature that have heretofore not been contemplated. Thus, it is respectfully submitted that claims 1 and 12 call for a novel and nonobvious flattened tube heat exchanger utilizing at least one continuous heat transfer fin that extends along an entirety of the heat transfer surface of the tube including any bends and curvatures therein while maintaining the transfer fin in contact with a single heat transfer surface. Thus, for at least these reasons it is respectfully submitted that claims 1 and 12 are nonobvious and patentable over the prior art of record. Claims 4-7, 10, 14-15, 17-20 and 23 all depend from one of claims 1 and 12 and, therefore, for at least the reasons stated above with reference to claims 1 and 12 are also nonobvious and patentable over the prior art of record. Claims 2, 3, 11, 13, 16 and 24 have been cancelled herein. Accordingly, withdrawal of the instant rejection is requested.

Claims 8-9 and 21-22 stand rejected under 35 U.S.C. § 103 as being unpatentable over Pestiaux in view of Shoop as applied to Claims 1-7, 10-20 and 23-24 and further in view of Paulman et al. (U.S. Pat. No. 4,794,985). This rejection is respectfully traversed.

Claims 8-9 and 21-22 depend from one of claims 1 and 12. Claims 1 and 12 are patentable for at least the reasons stated above. Accordingly, for at least these same reasons, it is respectfully submitted that claims 8-9 and 21-22 are nonobvious and patentable over the prior art of record. Thus, withdrawal of the instant rejection is requested.

CONCLUSION

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action, and as such, the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1600.

Respectfully submitted,

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